OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **GILMORE POND** the program coordinators recommend the following actions.

FIGURE INTERPRETATION

- Figure 1: These graphs illustrate concentrations of chlorophyll-a in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The historical data (the bottom graph) show a *stable* in-lake chlorophyll-a trend. Chlorophyll-a concentrations have remained below the New Hampshire mean value for ten years. While algae are present in all lakes, an excess amount of any type is not welcomed. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.

- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs on this page show historical and current year data. The lower graph shows a *stable* trend in lake transparency. Water clarity in July was slightly lower than September and most likely was the result of the weather conditions noted while sampling. The transparency values still remain above the New Hampshire mean. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than last year's readings. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity.

- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is the limiting nutrient for plants and algae in New Hampshire waters. Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show a *variable* trend for epilimnetic phosphorus levels, and a *slightly decreasing* trend for hypolimnetic levels. Overall phosphorus concentrations were slightly higher this

season, probably due to the increase in rain compared with the dry weather of last season. The averages of both layers' phosphorus concentrations were below the New Hampshire median. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

OTHER COMMENTS

- Conductivity continues to increase in Gilmore Pond (Table 6). Conductivity increases often indicate the influence of human activities on surface waters. Septic system leachate, agricultural runoff, iron deposits, and road runoff can all influence conductivity. It has been stated in previous years' reports that road salt may be the source of the increased conductivity levels. Please consider a metals test on the pond (a sample was collected in 1998) during the high waters in the spring. Bottles can be obtained from the DES Laboratory Services Unit. Contact Wendy Locke at (603) 271-3445 for more information.

- Dissolved oxygen was high throughout the water column (Table 9) in July. The oxygen was supersaturated from 7 to 9 meters. This may be due to an abundance of plankton at that level. The plankton was moderately abundant in July.

NOTES

- Monitor's Note (7/26/00): Very drizzly during sampling.

USEFUL RESOURCES

Minimum Shoreland Protection Standards, WD-BB-36, NHDES Fact Sheet. (603) 271-3503 or www.state.nh.us

The Wetlands Resource, WD-WB-7, NHDES Fact Sheet, (603) 271-3503 or www.state.nh.us

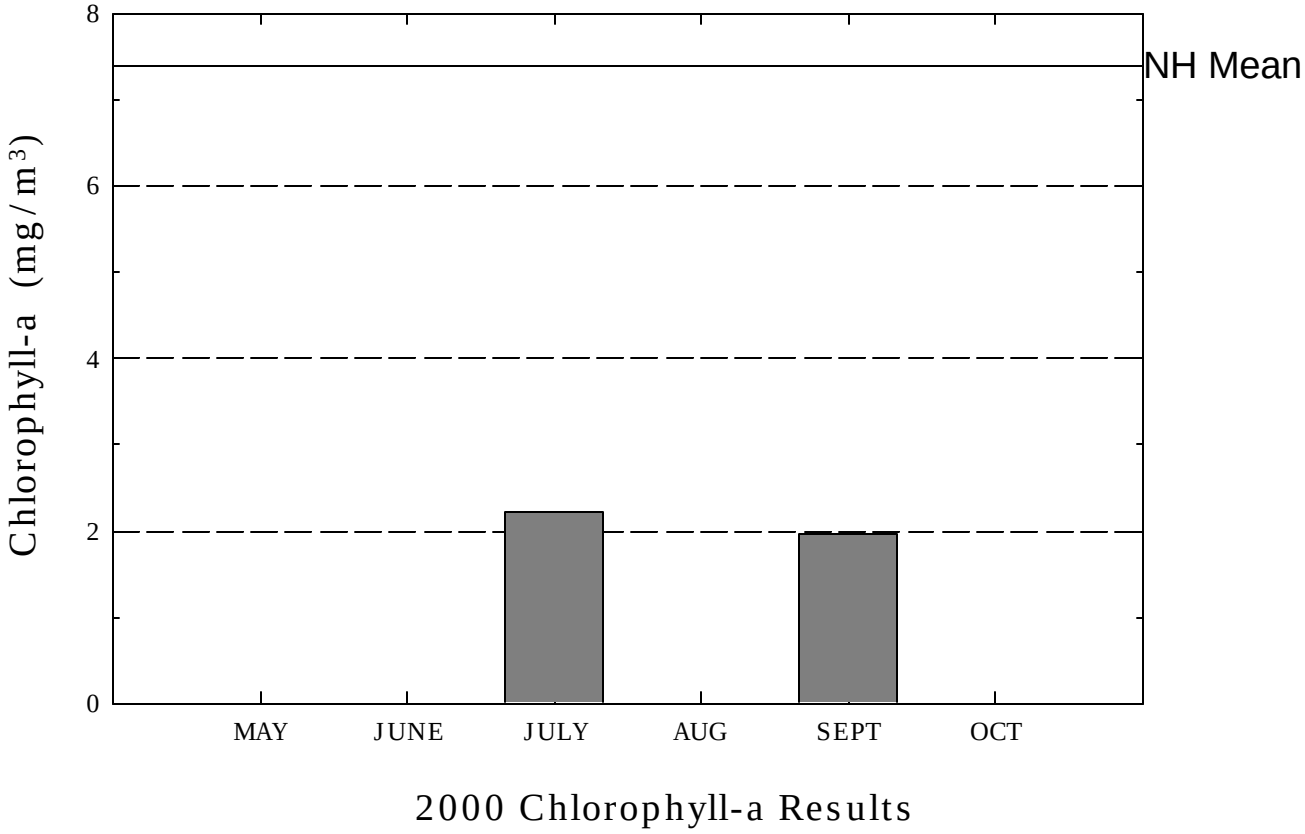
A Brief History of Lakes, NH Lakes Association pamphlet, (603) 226-0299 or www.nhlakes.org

Answers to Common Lake Questions, NHDES-WSPCD-92-12, NHDES Booklet, (603) 271-3503.

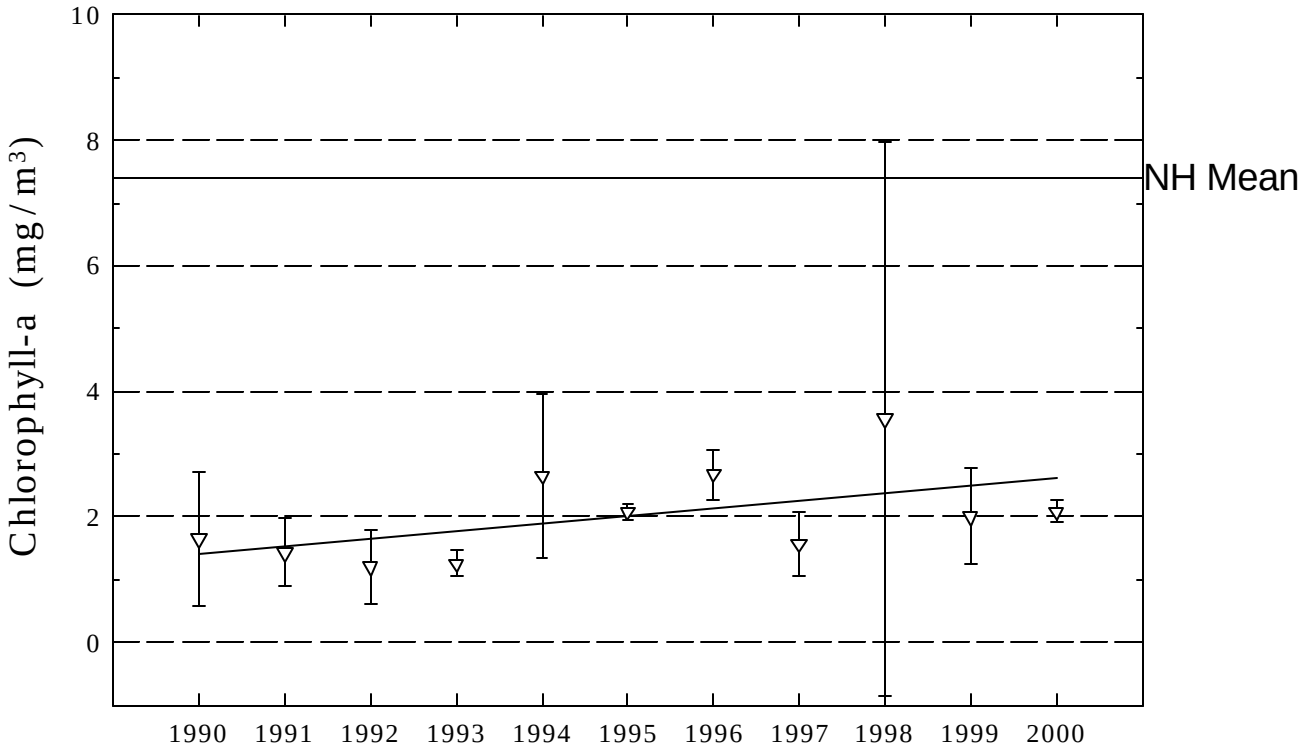
Road Salt and Water Quality, WD-WSQB-7, NHDES Fact Sheet, (603) 271-3503 or www.state.nh.us

Gilmore Pond

Figure 1. Monthly and Historical Chlorophyll-a Results



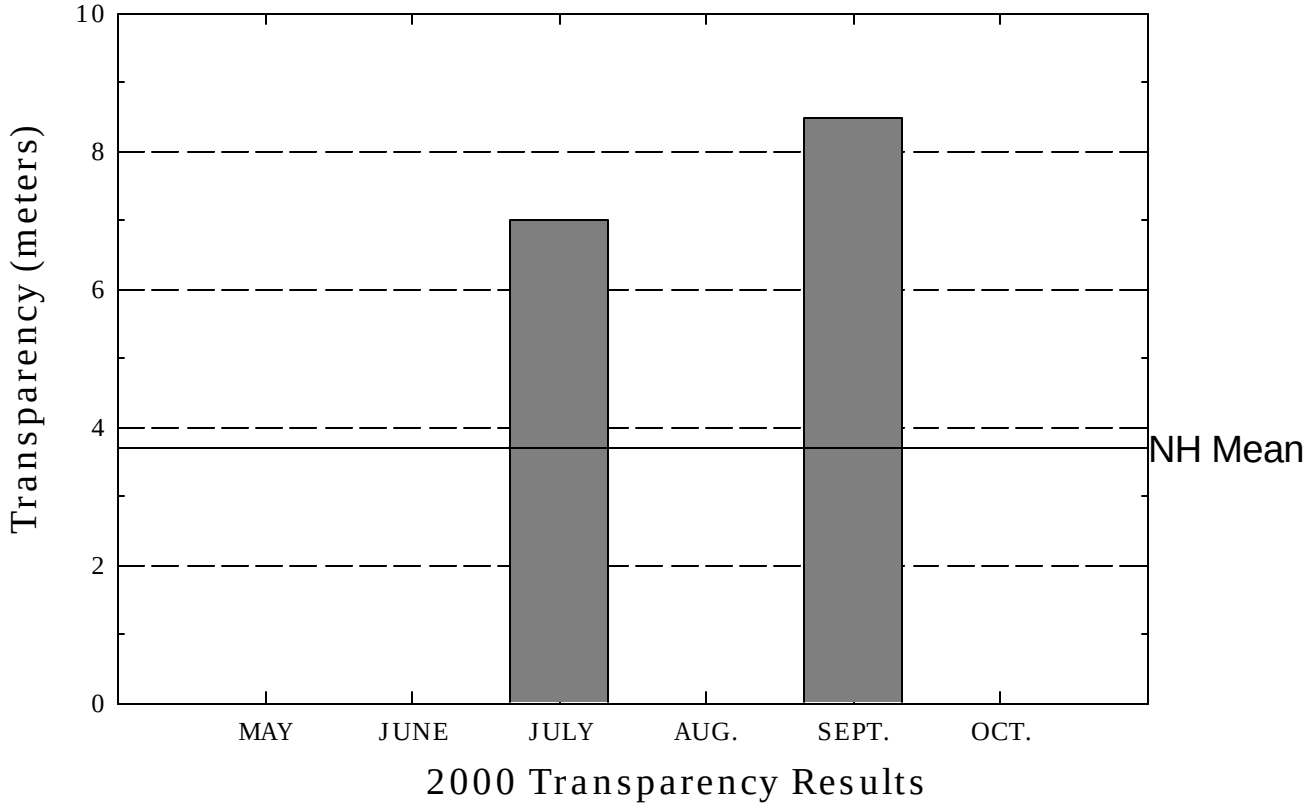
2000 Chlorophyll-a Results

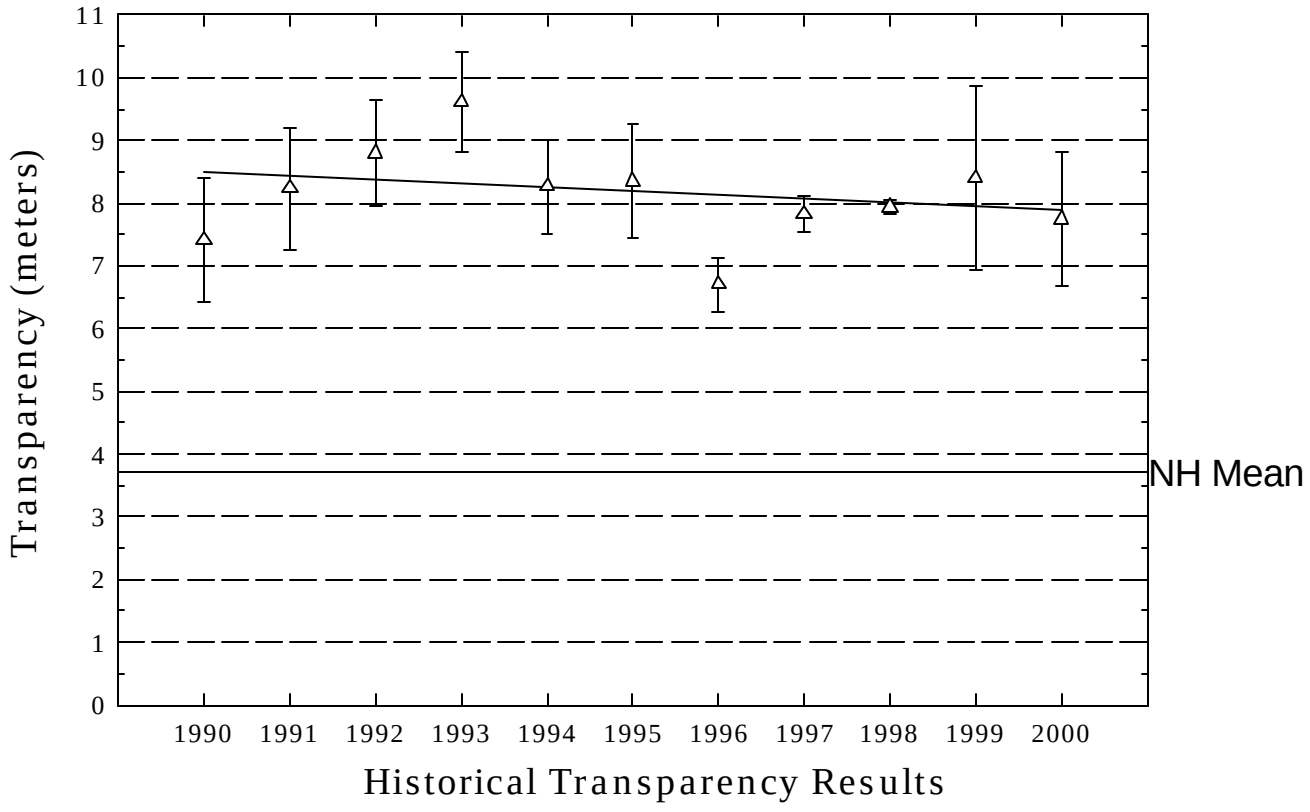


Historical Chlorophyll-a Results

Gilmore Pond

Figure 2. Monthly and Historical Transparency Results





Gilmore Pond

Figure 3. Monthly and Historical Total Phosphorus Data.

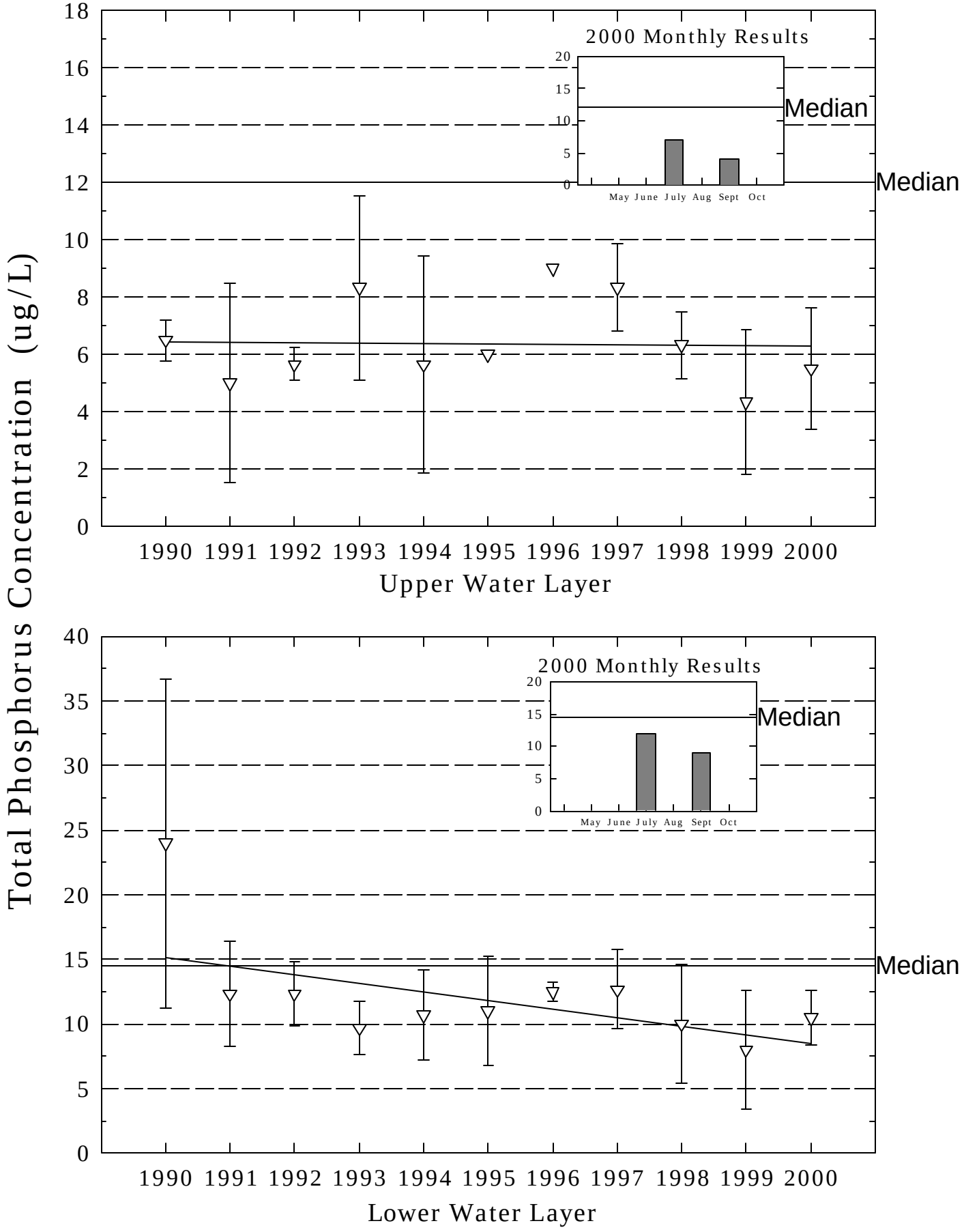


Table 1.

GILMORE POND

JAFFREY

Chlorophyll-a results (mg/m^3) for current year and historical sampling periods.

Year	Minimum	Maximum	Mean
1990	0.90	2.41	1.65
1991	0.90	1.99	1.43
1992	0.55	1.64	1.20
1993	1.07	1.47	1.25
1994	1.80	4.15	2.64
1995	1.99	2.18	2.08
1996	2.39	2.96	2.67
1997	1.26	2.16	1.56
1998	0.59	8.63	3.55
1999	1.26	2.78	2.00
2000	0.82	2.21	1.66

Table 2.

GILMORE POND

JAFFREY

Phytoplankton species and relative percent abundance.

Summary for current and historical sampling seasons.

Date of Sample	Species Observed	Relative % Abundance
06 / 14 / 1990	SPHAEROCYSTIS	37
	UROGLENOPSIS	26
	ANABAENA	6
07 / 22 / 1991	DINOBRYON	70
06 / 17 / 1992	SYNURA	64
	DINOBRYON	15
	SPHAEROCYSTIS	6
06 / 17 / 1993	ASTERIONELLA	37
06 / 15 / 1994	ASTERIONELLA	57
	DINOBRYON	13
	MALLOMONAS	11
06 / 14 / 1995	UROGLENOPSIS	69
	DINOBRYON	11
	GLOEOCYSTIS	6
06 / 25 / 1996	ASTERIONELLA	88
	MALLOMONAS	3
	DINOBRYON	2
06 / 18 / 1997	DINOBRYON	25
	SPHAEROCYSTIS	21
	CERATIUM	20
06 / 10 / 1998	DINOBRYON	47
	TABELLARIA	23
	UROGLENOPSIS	16
06 / 16 / 1999	DINOBRYON	52
	CERATIUM	21
	MALLOMONAS	12
07 / 26 / 2000	ASTERIONELLA	41
	CERATIUM	38
	DINOBRYON	13

Table 3.

GILMORE POND

JAFFREY

Summary of current and historical Secchi Disk transparency results (in meters).

Year	Minimum	Maximum	Mean
1990	6.7	8.1	7.4
1991	7.4	9.3	8.2
1992	8.0	9.7	8.8
1993	9.0	10.5	9.6
1994	7.5	9.0	8.2
1995	7.7	9.0	8.3
1996	6.4	7.0	6.7
1997	7.5	8.0	7.8
1998	7.8	8.0	7.9
1999	6.9	9.8	8.4
2000	7.0	8.5	7.6

Table 4.

GILMORE POND

JAFFREY

pH summary for current and historical sampling seasons.
Values in units, listed by station and year.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	1990	6.47	6.52	6.49
	1991	6.50	6.75	6.59
	1992	6.42	6.58	6.50
	1993	6.48	6.57	6.53
	1994	6.48	6.54	6.51
	1995	6.26	6.47	6.35
	1996	6.18	6.58	6.34
	1997	6.25	6.39	6.32
	1998	6.17	6.50	6.33
	1999	6.24	6.96	6.53
	2000	6.35	6.53	6.44
HYPOLIMNION				
	1990	6.11	6.31	6.20
	1991	6.24	6.56	6.38
	1992	6.19	6.46	6.32
	1993	6.34	6.63	6.46
	1994	5.92	6.43	6.10
	1995	6.12	6.54	6.28
	1996	5.99	6.15	6.06
	1997	3.45	6.22	3.93
	1998	6.23	6.40	6.31
	1999	6.21	6.28	6.26
	2000	6.05	6.52	6.19

Table 4.

GILMORE POND

JAFFREY

pH summary for current and historical sampling seasons.
Values in units, listed by station and year.

Station	Year	Minimum	Maximum	Mean
METALIMNION				
	1990	6.21	6.44	6.31
	1991	6.40	6.61	6.49
	1992	6.28	6.47	6.37
	1993	6.44	6.61	6.54
	1994	6.30	6.43	6.35
	1995	6.24	6.47	6.34
	1996	6.17	6.20	6.18
	1997	6.17	6.24	6.21
	1998	6.21	6.46	6.32
	1999	6.09	6.30	6.22
	2000	6.42	6.60	6.49
OUTLET				
	1990	6.32	6.70	6.47
	1991	6.50	6.51	6.51
	1992	5.49	5.70	5.60
	1993	5.72	5.83	5.76
	1994	5.42	6.65	5.73
	1995	5.70	5.70	5.70
	1996	5.44	5.71	5.55
	1997	5.34	5.59	5.43
	1998	5.36	5.52	5.41
	1999	5.89	6.23	6.03
	2000	5.11	5.82	5.36

Table 5.

GILMORE POND

JAFFREY

Summary of current and historical Acid Neutralizing Capacity.
Values expressed in mg/L as CaCO .

Epilimnetic Values

Year	Minimum	Maximum	Mean
1990	1.60	2.40	2.00
1991	1.60	1.70	1.67
1992	1.60	2.00	1.83
1993	0.70	1.80	1.43
1994	1.80	1.90	1.87
1995	1.50	1.80	1.65
1996	1.30	2.60	1.95
1997	1.40	2.70	1.87
1998	1.40	1.70	1.53
1999	1.80	2.10	1.97
2000	1.60	1.80	1.70

Table 6.

GILMORE POND

JAFFREY

Specific conductance results from current and historic sampling seasons. Results in uMhos/cm.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	1990	107.5	110.6	109.0
	1991	107.9	115.5	111.1
	1992	111.3	112.5	112.0
	1993	111.6	115.8	113.9
	1994	115.5	117.2	116.2
	1995	113.3	119.4	116.3
	1996	115.3	120.2	117.7
	1997	117.1	117.8	117.5
	1998	120.6	122.6	121.6
	1999	129.8	136.0	133.1
	2000	131.5	138.5	135.5
HYPOLIMNION				
	1990	108.4	110.3	109.3
	1991	107.8	110.9	109.3
	1992	109.3	109.8	109.4
	1993	109.0	115.3	112.4
	1994	113.9	119.2	116.1
	1995	111.5	122.9	117.2
	1996	117.7	119.3	118.5
	1997	114.2	244.8	160.6
	1998	118.5	127.2	122.4
	1999	126.7	133.2	129.6
	2000	132.9	138.1	135.7

Table 6.

GILMORE POND

JAFFREY

Specific conductance results from current and historic sampling seasons. Results in uMhos/cm.

Station	Year	Minimum	Maximum	Mean
METALIMNION				
	1990	107.8	109.3	108.5
	1991	109.6	112.8	111.5
	1992	110.5	111.3	110.9
	1993	111.6	116.5	114.4
	1994	113.7	118.4	115.6
	1995	110.7	119.7	115.2
	1996	115.2	117.9	116.5
	1997	115.1	118.5	117.2
	1998	115.8	122.0	119.7
	1999	129.4	133.0	131.2
	2000	136.9	138.6	137.6
OUTLET				
	1990	107.2	111.8	109.5
	1991	110.5	112.1	111.3
	1992	105.2	106.7	105.8
	1993	106.2	112.8	109.4
	1994	109.5	136.6	120.1
	1995	110.4	110.4	110.4
	1996	97.5	122.2	109.8
	1997	101.4	116.5	107.6
	1998	112.3	117.8	115.6
	1999	161.4	448.2	304.8
	2000	125.3	133.6	130.3

Table 8.

GILMORE POND

JAFFREY

Summary historical and current sampling season Total Phosphorus data. Results in ug/L.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	1990	6	7	6
	1991	3	9	5
	1992	5	6	5
	1993	6	12	8
	1994	3	10	5
	1995	6	6	6
	1996	9	9	9
	1997	7	10	8
	1998	5	7	6
	1999	2	7	4
	2000	4	7	5
HYPOLIMNION				
	1990	15	33	24
	1991	10	17	12
	1992	10	15	12
	1993	8	12	9
	1994	7	14	10
	1995	8	14	11
	1996	12	13	12
	1997	10	16	12
	1998	5	14	10
	1999	4	13	8
	2000	9	12	10

Table 8.

GILMORE POND

JAFFREY

Summary historical and current sampling season Total Phosphorus data. Results in ug/L.

Station	Year	Minimum	Maximum	Mean
METALIMNION				
	1990	6	20	13
	1991	5	7	5
	1992	6	8	7
	1993	5	7	6
	1994	3	14	9
	1995	5	10	7
	1996	7	10	8
	1997	9	17	13
	1998	5	9	7
	1999	6	9	7
	2000	< 5	7	6
OUTLET				
	1990	4	14	9
	1991	3	8	5
	1992	9	11	9
	1993	11	21	15
	1994	13	15	14
	1995	22	22	22
	1996	9	13	11
	1997	11	21	14
	1998	6	9	7
	1999	33	66	49
	2000	6	10	8

Table 9.

GILMORE POND

JAFFREY

Current year dissolved oxygen and temperature data.

Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
		July 26, 2000	
0.1	22.9	7.6	87.8
1.0	22.9	7.4	85.7
2.0	22.9	7.1	82.9
3.0	22.9	7.4	85.9
4.0	22.9	7.4	86.4
5.0	22.8	7.5	86.8
6.0	22.1	7.4	84.5
7.0	19.0	9.3	100.0
8.0	15.8	10.4	105.1
9.0	13.4	10.5	100.4
10.0	12.2	9.6	89.7
11.0	11.5	6.0	54.8
12.0	10.9	2.6	23.1

Table 10.

GILMORE POND

JAFFREY

Historic Hypolimnetic dissolved oxygen and temperature data.

Date	Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
June 14, 1990	12.0	10.0	10.6	93.6
July 22, 1991	12.0	13.0	2.3	21.8
June 17, 1992	12.5	8.9	10.4	89.4
June 17, 1993	12.0	10.2	13.7	119.0
June 15, 1994	12.0	9.5	10.1	87.0
June 14, 1995	12.0	11.0	8.4	75.0
June 25, 1996	12.0	9.0	4.1	35.0
June 18, 1997	12.0	13.1	10.0	95.0
June 10, 1998	12.0	10.5	12.2	108.0
June 16, 1999	12.0	12.6	7.7	72.8
July 26, 2000	12.0	10.9	2.6	23.1